

**REMARKS**

By this Amendment, claims 1 and 20 have been amended. No claims have been cancelled or added. Support for the instant amendments is provided throughout the as-filed application. No new matter has been added. Thus, claims 1, 2, 4-25, and 27-37 remain pending.

In view of the foregoing amendments and the following comments, allowance of all the claims pending in the application is respectfully requested.

**REJECTIONS UNDER 35 U.S.C. § 103**

In the Office Action:

- I. Claims 1, 2, 4-9, 11-15, 17-25, 27, 30 and 34-36 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2003/0193857 A1 to Ichibara, *et al.* (hereinafter "Ichibara") in view of U.S. Patent No. 6,903,511 B2 to Chistyakov (hereinafter "Chistyakov");
- II. Claim 10 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2002/0016017 A1 to Sakai, *et al.* (hereinafter "Sakai");
- III. Claim 16 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 1 above, and further in view of U.S. Patent No. 7,081,272 B2 to Sasaki, *et al.* (hereinafter "Sasaki");
- IV. Claim 28 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 20 above, and further in view of U.S. Patent Application Publication No. 2003/0152746 A1 to Vijayen, *et al.* (hereinafter "Vijayen");
- V. Claim 29 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 20 above, and further in view of U.S. Patent No. 5,468,520 to Williams, *et al.* (hereinafter "Williams");

VI. Claims 31-33 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 20 above, and further in view of U.S. Patent Application Publication No. 2003/0228727 A1 to Guerra (hereinafter “Guerra”); and

VII. Claim 37 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ichibara and Chistyakov as applied to claim 1 above, and further in view of Shibata.

Applicant traverses these rejections for *at least* the following reasons.

In the Office Action, the Examiner asserts that in paragraph [0130] of Ichibara, that the “AlSb in plasma state [is] volatilized.” [Office Action, page 3; *see also* page 8 (“AlSb volatized by plasma”)]. Applicant respectfully disagrees.

Even if plasma might be considered a volatile material, the cited passage of Ichibara does not disclose that any “volatile compound of the first deposition material is supplied to the plasma for the deposition,” as independent claim 1 recites (emphasis added). Instead, the AlSb appears to be in solid form (as a target) in the plasma already prior to sputtering thereof. [See Ichibara, paragraph [0130] (“In the second chamber, an AlSb target and an SiO<sub>2</sub> target are subjected to binary RF co-sputtering in an Ar plasma...”)(emphasis added)]. Therefore, the AlSb material cannot be supplied to the plasma in a volatile state.

Moreover, the Examiner identifies no fluid supply channel in Ichihara configured to supply the deposition material in a volatile state to the plasma, as independent claim 20 recites. Instead, as discussed above, the AlSb in Ichihara appears to be in solid form (as a target) in the plasma already prior to sputtering. And, despite the Examiner’s remarks regarding whether a fluid might be considered a gas [see Office Action, page 8], Applicant submits that one skilled in the art recognizes and appreciates that a solid material is neither a fluid or gas.

Furthermore, even assuming *arguendo* that it was proper to combine the teachings of Ichibara and Chistyakov (which Applicant does not concede), Applicant submits that the cited portions of Chistyakov do not overcome the deficiencies of Ichibara as set forth above. For

Instance, the Examiner merely relies upon the cited portions of Chistyakov to allegedly teach a DC plasma source. [Office Action, page 3].

Thus, Applicant submits that independent claims 1 and 20 are patentable over Ichibara and Chistyakov under § 103(a).

However, without acquiescing to the propriety of these rejections and solely in an effort to expedite prosecution, Applicant has amended independent claim 1 to further clarify aspects of the invention.

Amended independent claim 1 recites, *inter alia*, the features of:

wherein ... a volatile compound of the first deposition material is supplied from outside the process chamber to the plasma for the deposition.

[emphasis added].

Independent claim 20 has been similarly amended. As discussed above, the AlSb target in Ichibara is located within the process chamber during sputtering. [See Ichibara, paragraph [0130] ("In the second chamber, an AlSb target and an SiO<sub>2</sub> target are subjected to binary RF co-sputtering ... "(emphasis added)]. Thus, there is no volatile deposition material in Ichibara that is supplied from outside the process chamber to the plasma for the deposition.

Thus, Applicant submits that it would not have been obvious to one skilled in the art to modify the alleged combination Ichibara and Chistyakov in the manner recited by amended claims 1 and 20. *See In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.). Indeed, if the solid AlSb target in Ichibara were to be located outside the plasma chamber and away from the AR plasma inside the chamber, then the AlSb material could not be sputtered into the plasma.

For *at least* the foregoing reasons, Applicant submits that Ichibara and Chistyakov, whether taken alone or in combination, do not teach or otherwise render obvious at least these

features of claims 1 and 20. Dependent claims 2, 4-19, 21-25 and 27-37 depend from one of independent claims 1 and 20, and therefore are patentable for the same reasons as claims 1 and 20 and for the further features they disclose individually.

With regard to claim 2, Applicant notes that the Examiner fails to provide any factual basis to support the rejection thereof. This is improper. See *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness"). For at least this reason, the rejection of claim 2 is improper and should be withdrawn.

In addition, the cited portions of the remaining references relied upon by the Examiner in the other § 103 rejections do not appear to overcome these deficiencies of Ichibara and Chistyakov either. Rather, the Examiner merely alleges that these references teach one or more features of dependent claims only.

**CONCLUSION**

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, the application is in condition for allowance. Notice to that effect is respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

If an extension of time is necessary to prevent abandonment of this application, then such an extension of time is hereby petitioned for under 37 C.F.R. §1.136(a). Any fees required (including fees for net addition of claims) are hereby authorized to be charged to Deposit Account No. 033975 (Ref. No. 008895-0355438).

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